

Mechanical carousel 1 Bench Fitting (BF) – Synopsis

Scope

- This carousel covers a broad range of bench fitting skill that will prepare the trainee into the engineering or manufacturing sectors, creating a progression between education and employment, or will provide a basis for the development of additional skills which will be used in further mechanical carousels. The trainees will undertake two practical projects to develop their hand skills. The projects are a “Centre Square” & “Tap Wrench” which is realistically achievable in the time scale of the carousel. Both projects are tangible useful tools which can be kept by the trainee. As an extension the trainee can re-cycle the off-cut from the square to make the “Drill Gauge”

Aim

- To successfully manufacture using hand fitting skills a Centre Square & Toolmakers Clamp within the specified time scale

Objectives Theoretical

- Be able to use and interpret different systems of Measurement – Linear and Angular.
- Be able to solve arithmetical problems – fractions to decimals, decimals to fractions, metric conversions, Pythagoras, Trigonometric functions, WITHOUT THE USE OF CALCULATORS!
- Be able to understand and interpret Engineering drawings.
- Be familiar with the types of Engineering threads, uses & recognition.

Objectives Practical

- Manufacture piece parts to specification – Using hand fitting skills
- Assemble piece parts to specification – Using hand fitting skills
- Inspect and functionally test / modify

Underpinning Knowledge Lectures – Refreshers /Consolidation

- Apply safe working practices, Work-shop/Machine-shop safety
- Safe use of Hand Tools
- Measurement - Imperial & Metric units
- Project planning
- Threads & Locking devices & Bolt ID
- Engineering Drawing (*if required Covered in BTEC*)
- Engineering Materials (*if required Covered in BTEC*)

Hand-outs

- [Detailed part drawings & Assembly drawing](#)
- [Reading Vernier Scales](#)
- [Moore & Wright PDF](#)
- [Safe Use Of Hand Tools](#)
- [Threads & Locking Devices Handout](#)

Write-ups

- Planning sheets
- Inspection sheet
- Measurement test
- Basic Fitting test
- Bolt ID Write Up
- Threads & Locking Devices Write Up
- ROA

Experiential Learning - Learning through practical experience and learning by reflecting on experience.

Learning through practical experience

- Learning in a work-based environment – TTE Workshops
- Carrying out case study work – H&S past trends & requirements
- Planning and carrying out practical tasks and write-ups

Learning through reflecting at all stages of the experience

- Preparing and planning for the tasks
- Taking stock throughout the tasks
- Reviewing and adapting as necessary
- Reflecting after the task has been completed
- Evaluating, self-assessing and identifying learning points.

Core Skills Employed

Of the five Core Skills four are covered:

- **Communication** – *Understanding & Interpreting Engineering Drawings*
- **Numeracy** – *Using Imperial & Si Units to make calculations (non calculator)*
- **Problem Solving** – *Dealing with problems that arise during the manufacturing process*
- **Working with Others** – *Collaborating to work Effectively & Efficiently by seeking advice from the TO whilst working with their peers as part of a team*
- **Information Technology** – N/A

Generic Skills & Attitudes Gained:

- Understanding of the workplace and the employee's responsibilities, for example H&S, time-keeping, appearance,
- Self-evaluation skills
- Positive attitude to learning
- Flexible approaches to solving problems
- Adaptability and positive attitude to change